We Claim:

1. An optical wavefront sensor comprising:

an optical subsystem for optically heterodyning an optical test signal and an optical reference signal to generate an optically heterodyned signal;

a photodetector for converting said optically heterodyned signal to an electronic heterodyned signal;

an electronic subsystem for electronically heterodyning said electronic heterodyned signal and an electronic reference signal and generating a resultant signal;

a pulse counter for counting said resultant signal;

a control circuit for generating control signals for controlling said pulse counter; and

a first clock signal for clocking said pulse counter.

2. The optical wavefront sensor as recited in claim 1, wherein said optical subsystem includes a beam splitter for optically combining said optical test signal with an optical reference signal.

3. The optical wavefront sensor as recited in claim 2, wherein said optical subsystem includes an optical frequency shifter for frequency shifting said optical reference signal.

4. The optical wavefront sensor as recited in claim 3, wherein said optical frequency shifter is an electro-acoustical device driven by an RF drive which in turn is ~~clocked~~ by a said clock having a frequency f_1.

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5. The optical wavefront sensor as recited in claim 4, wherein said electro-acoustical device is a Bragg cell.

6. The optical wavefront sensor as recited in claim 1, wherein said control circuit includes a second clock having a frequency f_2 and a mixer for mixing said first clock signal f_1 and said second clock signal f_2.

7. The optical wavefront sensor as recited in claim 6, wherein said second clock f_2 signal is offset from said first clock signal by a value between 100 KHz and 1 MHz.

8. The optical wavefront sensor as recited in claim 7, wherein the low frequency output signal f_1-f_2 from said mixer is used as a reference signal.

9. The optical wavefront sensor as recited in claim 1, wherein said pulse counter has a preload input to enable compensation values to be preloaded therein.

10. A method for determining the phase front of an optical test signal, comprising the steps of:

(a) heterodyning the optical test signal with an optical reference signal to develop an optical heterodyned signal;

(b) directing said optically heterodyned signal to a photodetector to generate a heterodyned signal having a test frequency equal to the beat frequency between the optical test signal and the optical reference signal and a phase equal to the optical test signal;

(c) heterodyning said test electronic signal with which an electronic reference signal to generate an electronic heterodyned signal; and

(d) measuring the phase difference between said electronic reference signal and said electronic heterodyned signal.

11. The method as recited in claim 10, further including the step of squaring up said electronic heterodyned signal to develop pulses.

12. The method as recited in claim 11, wherein step (d) comprises counting said pulses by way of a pulse counter.

13. The method as recited in claim 12, further including the step (e) for generating stop and start signals to enable said pulse counter.

14. The method as recited in claim 13, wherein step (a) includes optically shifting an optical reference signal by way of an electro-acoustical device.

15. The method as recited in claim 14, wherein said step of optically shifting includes providing a first clock having a frequency f_1 and driving said electro-acoustical device at said first frequency f_1.

16. The method as recited in claim 15, wherein step (e) comprises generating a start signal by mixing said first clock signal having a frequency f_1 with said electronic reference signal having a frequency f_2.